

Plug-in Signal Conditioners M-UNIT

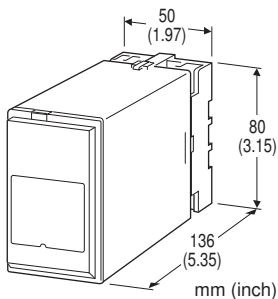
VAR TRANSDUCER

Functions & Features

- Providing a DC output signal in proportion to AC reactive power
- DC output containing little ripple is ideal for computer input
- "Time division multiplication" method accepts distorted waveforms
- Isolation up to 2000 V AC
- High-density mounting

Typical Applications

- Centralized monitoring and control of power management system in a manufacturing facility or building



MODEL: MERP-1[1][2][3]-[4][5]

ORDERING INFORMATION

- Code number: MERP-1[1][2][3]-[4][5]
- Specify a code from below for each of [1] through [5].
(e.g. MERP-11PA-C/Q)
- Calibration range (e.g. lag 1000 – lead 1000 var)
- VT ratio, CT ratio (e.g. VT 3300/110 V, CT 250/5 A)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q
(e.g. /C01/S01)

CONFIGURATION

1: 3-phase / 3-wire

[1] INPUT (unbalanced load)

(Voltage must be balanced.)

- 1: 110 V / 5 A AC
- 2: 110 V / 1 A AC
- 3: 220 V / 1 A AC
- 4: 220 V / 5 A AC

[2] OUTPUT SIGNAL POLARITY

P: Negative in lag, positive in lead

M: Negative in lead, positive in lag

[3] OUTPUT

Current

- A: 4 – 20 mA DC (Load resistance 600 Ω max.)
- B: 2 – 10 mA DC (Load resistance 1200 Ω max.)
- C: 1 – 5 mA DC (Load resistance 2400 Ω max.)
- D: 0 – 20 mA DC (Load resistance 600 Ω max.)
- E: 0 – 16 mA DC (Load resistance 750 Ω max.)
- F: 0 – 10 mA DC (Load resistance 1200 Ω max.)
- G: 0 – 1 mA DC (Load resistance 12 k Ω max.)
- GW: -1 – +1 mA DC (Load resistance 10 k Ω max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

- 1: 0 – 10 mV DC (Load resistance 10 k Ω min.)
- 2: 0 – 100 mV DC (Load resistance 100 k Ω min.)
- 3: 0 – 1 V DC (Load resistance 1000 Ω min.)
- 4: 0 – 10 V DC (Load resistance 10 k Ω min.)
- 5: 0 – 5 V DC (Load resistance 5000 Ω min.)
- 6: 1 – 5 V DC (Load resistance 5000 Ω min.)
- 1W: -10 – +10 mV DC (Load resistance 10 k Ω min.)
- 2W: -100 – +100 mV DC (Load resistance 100 k Ω min.)
- 3W: -1 – +1 V DC (Load resistance 1000 Ω min.)
- 4W: -10 – +10 V DC (Load resistance 10 k Ω min.)
- 5W: -5 – +5 V DC (Load resistance 5000 Ω min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

[4] POWER INPUT

AC Power

- B: 100 V AC
- C: 110 V AC
- D: 115 V AC
- F: 120 V AC
- G: 200 V AC
- H: 220 V AC
- J: 240 V AC

DC Power

- S: 12 V DC
- R: 24 V DC
- V: 48 V DC
- P: 110 V DC

[5] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)**COATING (For the detail, refer to M-System's web site.)**

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

TERMINAL SCREW MATERIAL

/S01: Stainless steel

GENERAL SPECIFICATIONS**Construction:** Plug-in**Connection:** M3.5 screw terminals**Screw terminal:** Chromated steel (standard) or stainless steel**Housing material:** Flame-resistant resin (black)**Isolation:** Voltage input to current input to output to power**Overrange output:** Approx. -10 to +120 % at 1 - 5 V**Zero adjustment:** -5 to +5 % (front)**Span adjustment:** 95 to 105 % (front)**INPUT SPECIFICATIONS****Frequency:** 50 or 60 Hz• **Current Input****Operational range:** 0 - 120 % of rating**Overload capacity:** 1000 % of rating for 3 sec., 200 % for 10 sec., 120% continuous• **Voltage Input****Operational range:** 0 - 120 % of rating**Overload capacity:** 150 % of rating for 10 sec., 120 % continuous■ **Input Range****How To Determine Var Range:**

Calibration Range [var] = Measuring Range ÷ ((VT Ratio) × (CT Ratio))

Check that the required calibration range is within the available range in the table. Specify this range when ordering.

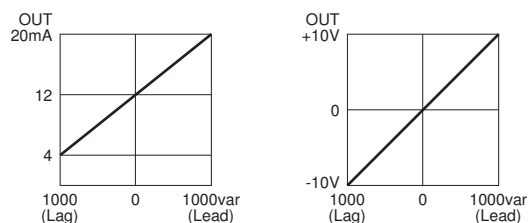
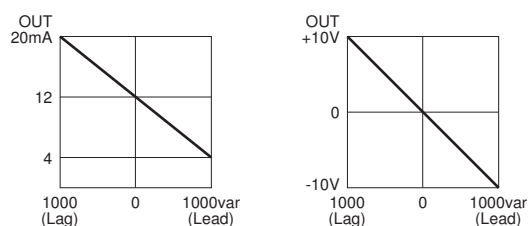
[example]

3-phase / 3-wire, measuring range 75 kvar, VT 220 / 110 V, CT 250 / 5 A

$$75 \times 10^3 [\text{var}] \div ((220 \div 110) \times (250 \div 5)) = 750 [\text{var}]$$

• **3-phase / 3-wire**

INPUT		AVAILABLE RANGE	BURDEN (VA)	
	STD.RANGE		VOLT.	CURR.
110V/1A	200 var	100 - 240 var	0.2 /phase	0.1/phase
110V/5A	1000 var	500 - 1200 var		0.5/phase
220V/1A	400 var	200 - 480 var	0.4 /phase	0.1/phase
220V/5A	2000 var	1000 - 2400 var		0.5/phase

OUTPUT SPECIFICATIONS■ **DC Current:** 0 - 20 mA DC and ± 1 mA**Minimum span:** 1 mA**Offset:** Max. 1.5 times span**Load resistance:** Output drive 12 V maximum; 10 V for [±] output■ **DC Voltage:** -10 - +12 V DC**Minimum span:** 5 mV**Offset:** Max. 1.5 times span**Load resistance:** Output drive 1 mA max. at ≥ 0.5 V■ **OPERATION DIAGRAM (example)**• **Negative in lag, positive in lead**• **Negative in lead, positive in lag****INSTALLATION****Power input**• **AC:** Operational voltage range: rating ±10 %, 50/60 ±2 Hz, approx. 2 VA• **DC:** Operational voltage range: rating ±10 %, or 85 - 150 V for 110 V rating, ripple 10 %p-p max., approx. 2 W (18 mA at 110 V)**Operating temperature:** -5 to +60°C (23 to 140°F)**Operating humidity:** 30 to 85 %RH (non-condensing)**Mounting:** Surface or DIN rail**Weight:** 400 g (0.88 lb)

PERFORMANCE in percentage of span

Accuracy: $\pm 0.5 \%$

Temp. coefficient: $\pm 0.05 \%/^{\circ}\text{C}$ ($\pm 0.03 \%/^{\circ}\text{F}$)

Response time: $\leq 1 \text{ sec.}$ (0 - 90 %)

Ripple: 0.5 %p-p max. (50/60 Hz)

The output ripple may increase when there is great difference between the frequencies of input signal and power supply.

Line voltage effect: $\pm 0.1 \%$ over voltage range

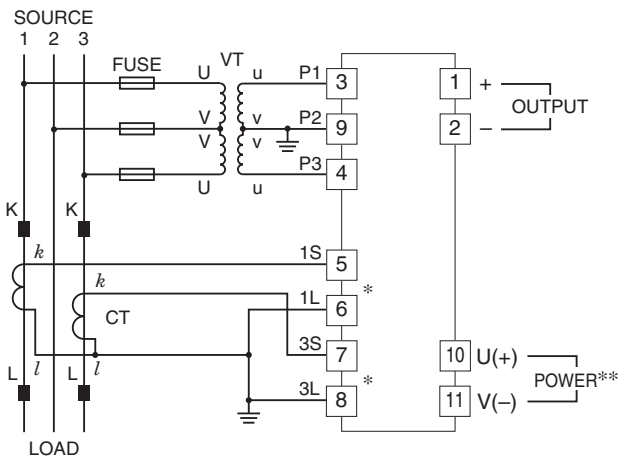
Insulation resistance: $\geq 100 \text{ M}\Omega$ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute

(voltage input to current input to output to power to ground)

CONNECTION DIAGRAM

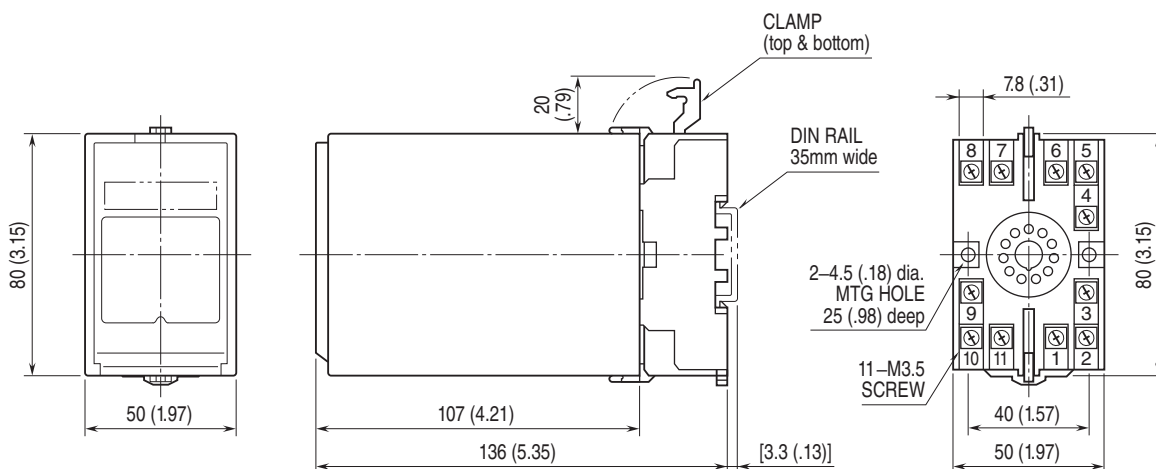
3-PHASE/3-WIRE



*CT Protector (model: CTM) attached to these terminals.

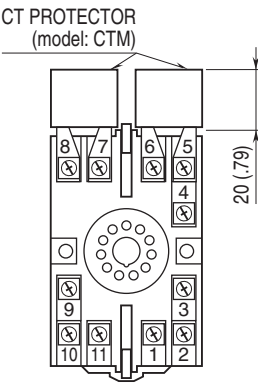
**The transducer can be powered from the input voltage when the voltage is sufficiently stable and meets other supply voltage requirements.

EXTERNAL DIMENSIONS unit: mm (inch)



• When mounting, no extra space is needed between units.

TERMINAL ASSIGNMENTS unit: mm (inch)



Specifications are subject to change without notice.